

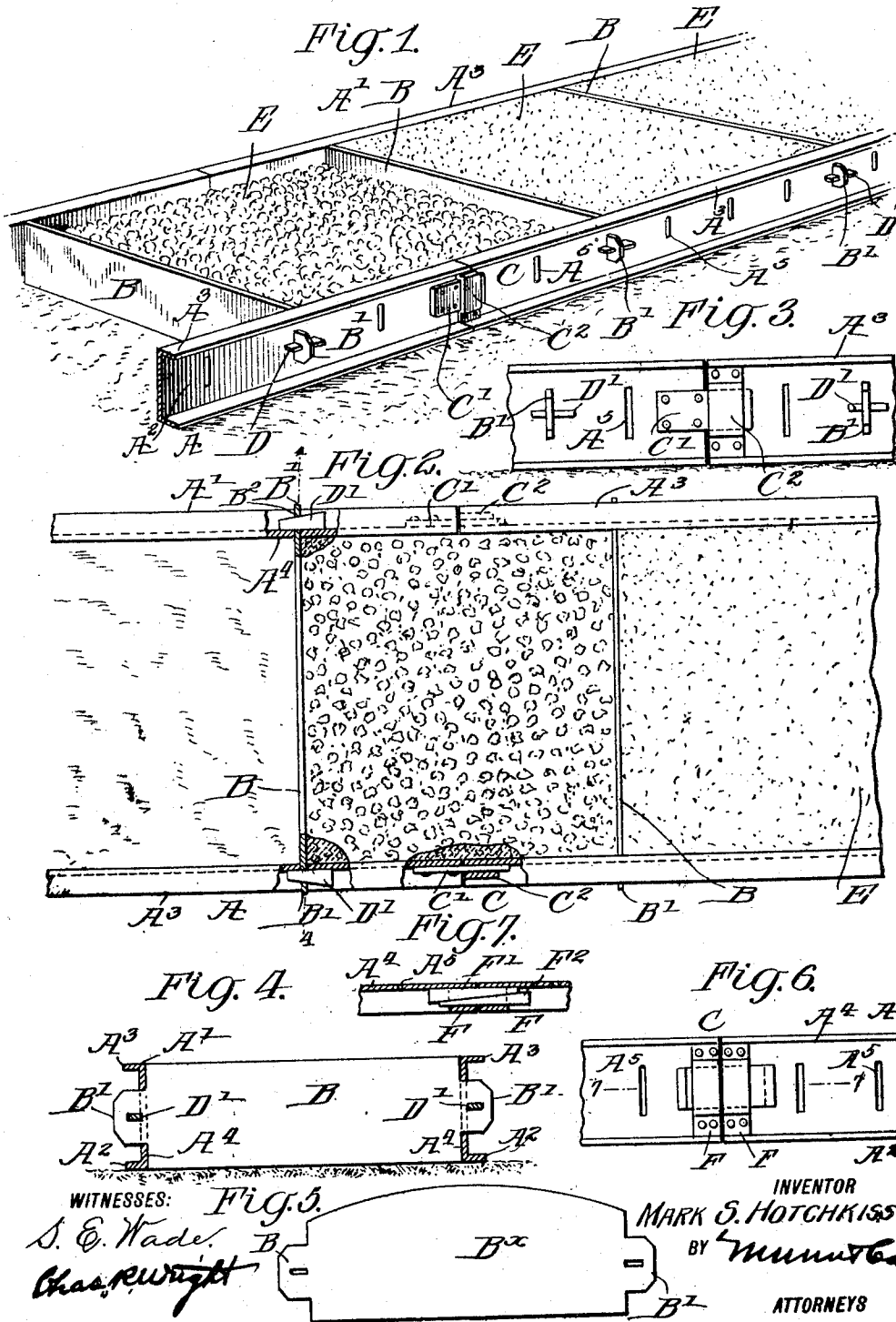
M. S. HOTCHKISS.
 FORM FOR THE CONSTRUCTION OF CONCRETE WALKS, FLOORS, CURBS, GUTTERS, AND
 LIKE STRUCTURES.

APPLICATION FILED DEC. 7, 1910.

Patented Feb. 21, 1911.

3 SHEETS—SHEET 1.

985,035.



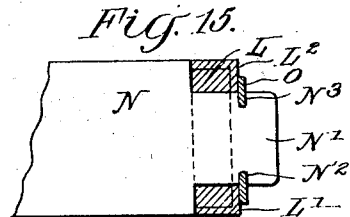
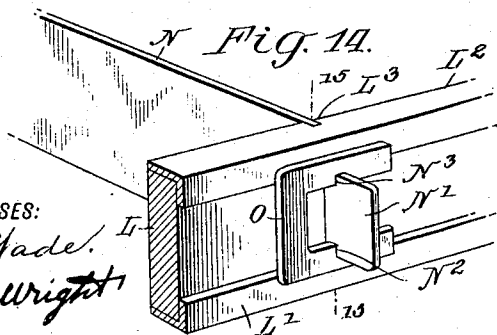
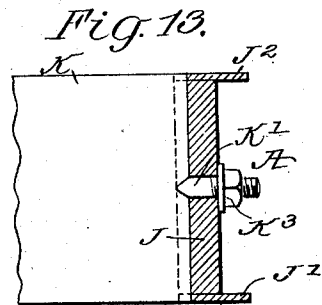
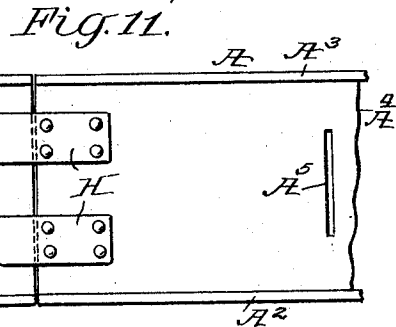
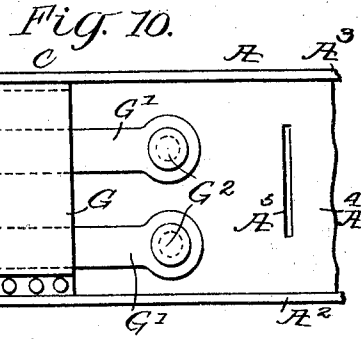
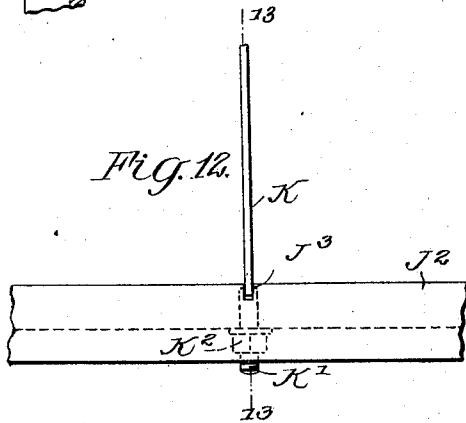
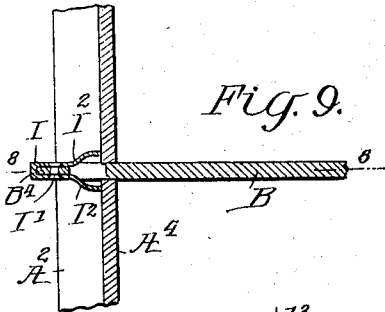
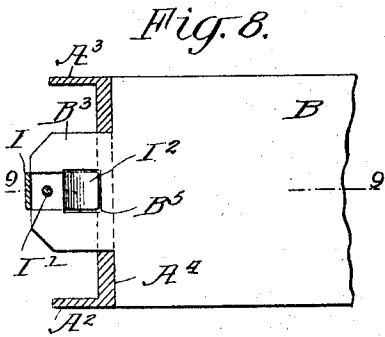
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985,035.



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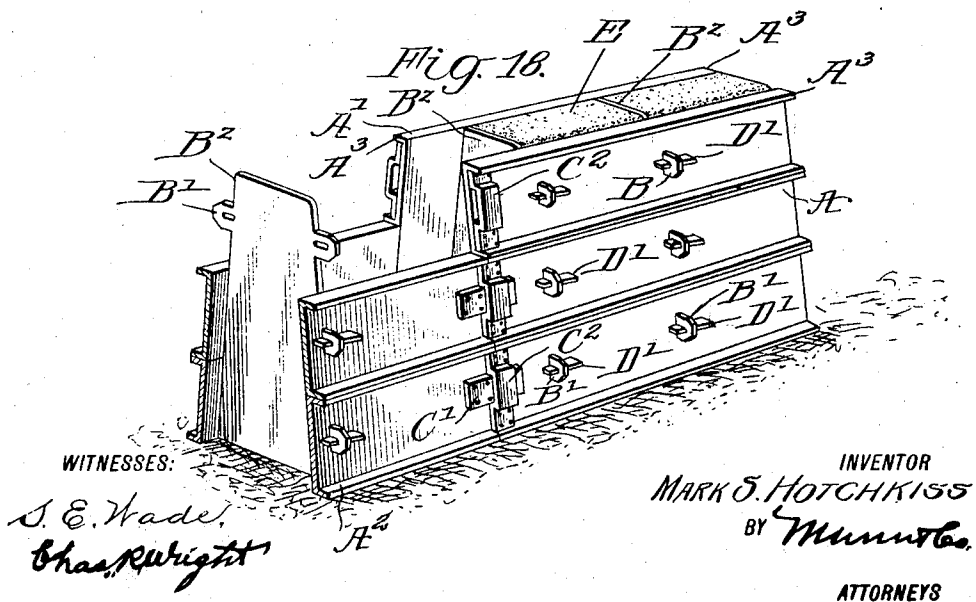
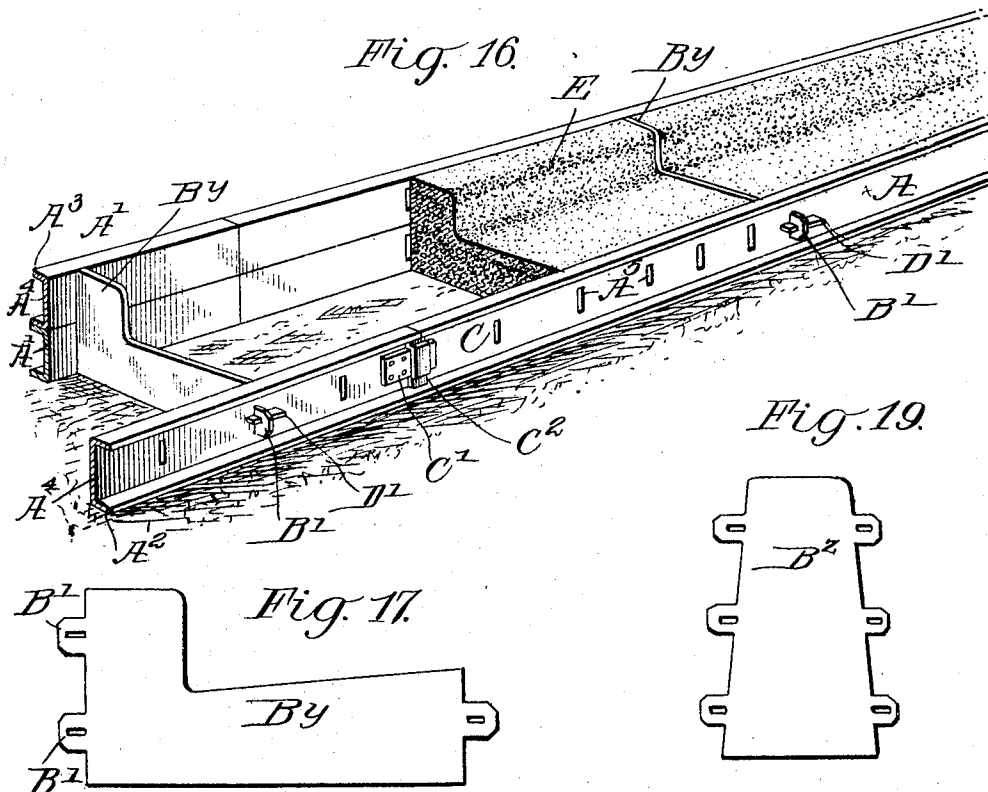
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3 SHEETS—SHEET 3.



UNITED STATES PATENT OFFICE.

MARK STEWART HOTCHKISS, OF BINGHAMTON, NEW YORK.

FORM FOR THE CONSTRUCTION OF CONCRETE WALKS, FLOORS, CURBS, GUTTERS, AND LIKE STRUCTURES.

985,035.

Specification of Letters Patent.

Patented Feb. 21, 1911.

Application filed December 7, 1910. Serial No. 596,075.

To all whom it may concern:

Be it known that I, MARK STEWART HOTCHKISS, a citizen of the United States, and a resident of Binghamton, in the county of Broome and State of New York, have invented a new and Improved Form for the Construction of Concrete Walks, Floors, Curbs, Gutters, and Like Structures, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved form for the construction of concrete walks, floors, curbs, gutters, and like structures, and arranged to insure perfect alinement of the sections of the form and stability of the form without requiring stakes or braces, and to permit of conveniently and quickly assembling the form parts into a self-sustaining mold. The form when set up has compartments adapted to receive plastic material for forming the structure, and in which the sections are spaced apart to allow ready expansion and contraction due to atmospheric or other causes, or to permit the independent removal and replacement of sections of the completed structure. The construction of the forms permits the ready disassembling and removal of the form parts prior to the hardening of the plastic material, without danger of disturbing or marring the sections, so that the molded surfaces may be readily finished, and so that the form may be reemployed immediately, thereby reducing the number of form parts required.

The form consists of interchangeable parts which may be variously combined for the several kinds of construction above mentioned.

For the purposes mentioned use is made of sides spaced apart and their lower edges disposed in approximately the same horizontal plane, the sides having bases for resting the sides on the ground or other support, and top surfaces for guiding a strike-off tool for shaping the upper surface of the structure and removing surplus plastic materials, the sides being provided intermediate their ends with oppositely disposed slots or apertures; thin transversely-disposed division plates extending between the said sides and having their ends abutting against the inner faces of said sides, the said division plates being in general flush at top

and bottom with the top and base surfaces of the said sides, the said division plates being shaped to conform to the cross-section of the structure to be molded, thereby allowing their upper edges to be used for guiding a strike-off tool to shape the upper surface of the structure, and the said division plates being provided at their ends with tongues extending through the said side apertures, whereby the sides and division plates are held in upright position, and removable locking means in engagement with the projecting outer ends of the said tongues and the outer faces of the said sides, to lock the sides and division plates together.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a perspective view of the form set up and showing some compartments completely filled and finished with plastic material, and another compartment but partly filled with the plastic material. Fig. 2 is a plan view of the same, parts being in section. Fig. 3 is a side elevation of a portion of the same. Fig. 4 is a transverse section on line 4—4 of Fig. 2. Fig. 5 is a side view of a division plate to be used in forming crossings. Fig. 6 is a side elevation of a modified form of the means employed for fastening the adjacent ends of successive side sections together. Fig. 7 is a sectional plan view of the same on the line 7—7 of Fig. 6. Fig. 8 is a cross section of a modified form of the means for fastening a division plate to a side beam, the section being on the line 8—8 of Fig. 9. Fig. 9 is a sectional plan view of the same on the line 9—9 of Fig. 8. Fig. 10 is a side elevation of a modified form of the means for fastening adjacent ends of successive side sections together. Fig. 11 is a like view of another modified form of the same. Fig. 12 is a plan view of a modified form of the means for fastening a division plate in position on a side. Fig. 13 is a cross section of the same on the line 12—12 of Fig. 11. Fig. 14 is a sectional perspective view of another modified form of the means for fastening a division plate to the side section. Fig. 15 is a transverse section of the same on the line 15—15 of Fig. 14. Fig. 16 is a perspective view of a form

for forming a curb and gutter, showing one compartment empty and the others filled. Fig. 17 is a side view of one of the division plates. Fig. 18 is a perspective view of a form for forming a curb, two of the compartments being filled and the other empty; and Fig. 19 is a side view of one of the division plates.

The form for laying concrete sidewalks consists essentially of sectional sides A, A', transverse division plates B, interlocking means C for fastening the adjacent ends of the sections of a side A or A' together, and fastening devices D for fastening the division plates B and the sides A, A' together.

The sides A, A', as shown in Figs. 1 to 10, inclusive, are preferably formed of channel beams, each having a bottom flange A², a top flange A³ and a web A⁴, the channel beams being set up so that the webs A⁴ are disposed vertically, and the flanges A², A³ extend outwardly, the lower flange A² forming a base for supporting the beam on the ground and the upper flange A³ forming a guide for supporting a strike off tool, to remove the surplus plastic material, as herein-after more fully explained. The webs A⁴ are provided with vertical slots or apertures A⁵, preferably spaced equidistant, the slots A⁵ of the side A being directly opposite the slots A⁵ on the other side A', to form pairs of transversely registering slots, for the reception of tongues B', formed integrally on the ends of the division plates B. Each division plate B is made thin and is of a height corresponding to the height of the sides A, A', so that when the tongues B' of a division plate B engage a pair of registering apertures A⁵, then the division plate is held in a vertical position, and its top and bottom are flush with the top and bottom flanges A³, A² of the sides A, A'. By reference to the drawings, it will be noticed that the ends of each division plate B abut against the inner surfaces of the sides A, A'. Each tongue B' is provided with a slot B² for the reception of a key D', adapted to engage the outer face of the web A⁴, so as to securely fasten the division plate B in position at the sides A, A', it being understood that when the key D' is driven home, the sides A, A', are moved in firm engagement with the ends of the division plates B, to form a rigid structure.

In order to join the adjacent ends of successive side beams of the sides A, A', use is made of the fastening devices C, shown in Figs. 1, 2 and 3 as consisting of a tongue C' secured to the outside of the web A⁴, at one end of the beam, to project beyond the same and enter a socket C² attached to the web A⁴ at the end of the next successive beam, as will be readily understood by reference to Figs. 1, 2 and 3. Thus successive beams are fastened together at their adjacent ends so

that the inner surfaces of the sides A, A', form a continuous and practically unbroken surface, and the side beams A, A' form with the division plates B compartments for the reception of the concrete or other plastic material E.

When the form is set up it is sufficiently firm and rigid to require no further braces or stakes for holding the sides in alinement, and the form is not liable to shift, owing to its rigidity, and consequently the workmen can readily fill the concrete or other plastic material E into the compartments, one after the other, and finish the same with the strike-off tool guided on the upper edges of the form, to insure the formation of a smooth top surface. Before the plastic material hardens, the locking devices D are removed, and the side beams are detached laterally from the division plates; the division plates are then withdrawn from between adjacent sections of the walk; thus allowing the finishing of the joints between said adjacent sections, and the exposed sides of said sections.

For the construction of crossings, I use division plates of the form shown in Fig. 5. The plate B* is similar in construction to the plates B except that it has its upper edge curved, so that the crossing will have a convex or curved upper surface.

It is understood that in taking the form apart it is necessary only to remove the wedges D, so as to allow of moving the side beams outward, away from the sides of the walk, after which the division plates B may be lifted or drawn out, thus leaving the sidewalk or crossing in sections, spaced apart so as to permit the expansion and contraction of the sidewalk sections.

Although the form above described, is the preferred one, other interlocking end-engaging means on the side faces of the side bars may be used. For instance, instead of the tongues C and sockets D other sockets such as F' may be secured to the webs A⁴ at the ends of the adjacent beams and into said sockets may be driven wedges F', F² from the opposite sides so as to lock the beams together, as seen in Figs. 6 and 7.

As shown in Fig. 10, the locking device consists of a socket G fastened to the end of one beam, and through the socket extend links or hooks G' pivoted at G² on the beam carrying the socket G, the free or hook ends of the said hooks G' engaging studs G³, secured on the web of the adjacent beam, so as to hold the two beams interlocked one with the other and each in alinement with the other.

As shown in Fig. 11, hooks H are employed, riveted or otherwise fastened to the web A⁴ of one beam, to hook onto studs H' on the web A⁴ of the adjacent beam.

The means for fastening the division

plates B in position on the corresponding side beam may also be varied, for instance, as shown in Figs. 8 and 9, the division plate B is provided with a tongue B³ at each end, and on the tongue is formed a reduced portion B⁴, engaged by a U-shaped spring I, riveted in place in the reduced portion by a rivet I', the spring having its free ends I² extending inwardly, to abut against the outer face of the web A⁴ after the tongue B³ is pushed through the corresponding slot A⁵ in the web A⁴. The tongue B³ is provided with an opening B⁵ for the free ends I² when the tongue B³ is pushed through the slot A⁵, as before explained.

Although channel beams having a metal web and metal flanges are preferred in the construction of the sides A, A', the latter may be made in the form of beams (see Figs. 12 and 13), having a wooden web J and the bottom and top flanges J', J² of metal. Each division plate K is provided at each end with a stud K', passing through an aperture in the web J, and on the end of the stud screws a nut K² against a washer K³ resting against the outer face of the web J. In order to hold the division plate K in a vertical position, the end portions thereof extend into vertical slots J³, formed in the inner faces of the side beams. On removing the nuts K² the side beams can be readily moved away from the sides of the sidewalk, to allow of finishing the said sides prior to the concrete having set and hardened.

In the construction disclosed in Figs. 14 and 15 the side beam is formed of a wooden web L and metal bottom and top flanges L', L², which protect the web and also serve the same purpose as the flanges A², A³. The division plate N is provided at each end with a tongue N', projecting through a slot in the web L, the tongue abutting with its bottom and top edges against the flanges L', L², and the tongue having bottom and top notches N², N³ for engagement by the side arms of a U-shaped key O, resting against the flanges L' and L², as plainly shown. The ends of the division plates N are preferably let into recesses L³ formed in the inner faces of the side beams, as shown in Fig. 14.

In Fig. 16 I have shown a form for constructing a curb and gutter. In this form the side beams are similar in construction to the side beams shown in Fig. 1 and are fastened together by similar fastening devices C', C². One of the sides of the form is formed by two superimposed beams A' while the other side is formed by a single beam A. The division plates B' are shaped to conform to a cross-section of the curb and gutter to be constructed, but with the addition of tongues B' for the securing of one or more side beams A or A' at either end by means of keys D', the same as the plates B in Fig. 1. The division plates B' serve as

guides for striking off the surface and for securing uniformity in the shape and dimensions of the curb and the dip of the gutter. The number of side beams A or A' used on either end is immaterial and for this purpose it is possible to utilize the side beams of sidewalk forms if desired. The top side beams on either end are preferably flush with the adjacent upper edge of the division plates.

For constructing a curb I use the form shown in Fig. 18. In this form I also use side beams similar in construction to the beams shown in Fig. 1, and fasten them together by similar fastening devices C', C². As shown a plurality of side beams A, A' are employed on each side, as many being used as the height of the curb requires, and the division plates B' are secured to the said beams by tongues B' and keys D' the same as in Fig. 1. These division plates are capable of wide variation in shape, and the number and location of the tongues on the said plate can be varied and changed, the number and location being determined by the height of the plates and the number of side beams employed.

As will be seen the side beams are adapted to be interchangeably used for the several forms. This not only facilitates the forming of different structures by simply using different division plates, but it greatly reduces the cost of said structures.

I claim—

1. A sectional form comprising metal side bars provided with interlocking end-engaging means on a side face of the side bars, and slots intermediate the ends of said side bars, transverse division plates having shoulders adapted to abut against the said side bars and tongues adapted to be inserted through the slots in said bars, and means engaging said tongues to secure the parts in position; said bars and division plates making a guide for striking-off, substantially as described.

2. A form for concrete work, comprising sides spaced apart and disposed in approximately the same horizontal plane, the sides having bases for resting the sides on the ground and top surfaces for guiding a strike-off or finishing tool, the sides being provided intermediate their ends with oppositely-disposed slots or apertures, transversely-disposed division plates extending between the said sides and having their ends abutting against the inner faces of the said sides, the said division plates being flush at the top and bottom with the top and base surfaces of the said sides, and the said division plates being provided at their ends with tongues extending through the said side apertures, whereby the division plates and sides are held in upright position, and removable locking means in engagement

with the projecting outer ends of the said tongues and the outer faces of the said sides to lock the sides and division plates together.

3. A form for concrete work, comprising
 5 channel beams spaced apart and disposed in approximately the same horizontal plane, the channel beams being set up with their flanges at the top and bottom and extending outward in opposite directions, and each
 10 bottom flange forming a base for resting the beam on the ground, and the upper flange forming guiding surfaces for a strike-off or finishing tool, both flanges giving lateral and vertical rigidity, the webs of the said
 15 channel beams being provided intermediate their ends with oppositely-disposed apertures, and transverse vertically-disposed division plates extending between the said channel beams and having their ends abutting
 20 against the inner faces of the channel beams, the said division plates being flush at the top and bottom with the top and bottom surfaces of the said channel beams, and the said division plates being provided
 25 at their ends with tongues extending through the said apertures in the said webs whereby the said division plates and channel beams are held in upright position, and removable
 30 locking means for engagement with the projecting outer ends of the said tongues to lock the channel beams and division plates together.

4. A form for concrete work, comprising
 35 channel beams spaced apart and disposed in approximately the same horizontal plane, the channel beams being set up with their flanges at the top and bottom and extending outward in opposite directions, each
 40 bottom flange forming a base for resting the beam on the ground, and the upper flanges forming guiding surfaces for a strike-off or finishing tool, the flanges giving lateral and vertical rigidity, the webs of the said channel beams being provided intermediate their
 45 ends with oppositely-disposed apertures, transverse vertically-disposed division plates extending between the said channel beams and having their ends abutting against the inner faces of the channel beams, the said
 50 division plates being flush at top and bottom with the top and bottom surfaces of the said channel beams and the said division plates being provided at their ends with tongues extending through the apertures in
 55 the said webs whereby the said division plates and channel beams are held in upright position, the said tongues being provided with slots, and wedges inserted in the said slots and resting against the outer faces
 60 of the webs of the channel beams.

5. A sectional form for concrete work,

comprising sectional sides having self-sustaining bases for sustaining the sides on the ground, the sections of each side being joined
 at adjacent ends to present an inner sur- 65
 face of unbroken continuity, each section of a side being provided intermediate its ends with apertures, interlocking means exteriorly on the adjacent ends of successive sections of a side to lock the sections together, 70
 transverse division plates spaced apart between the sectional sides and having their ends abutting against the said inner faces of the sides to form compartments for the reception of the plastic material, the said 75
 division plates being flush on top and bottom with the top and base of the said sides to guide a striking-off or finishing tool over the said tops of the sides and division plates, and the said division plates being provided 80
 at their ends with tongues extending through the said apertures in the sides whereby the said division plates are held in upright position, and removable locking means for engagement with the projecting outer ends of 85
 the said tongues to lock the sides and division plates together.

6. A sectional form for concrete work, comprising sectional sides, transverse division plates spaced apart and extending be- 90
 tween the sectional sides, fastening means for fastening the said division plates to the said sides, and interlocking means for connecting adjacent ends of successive side 95
 sections with each other, each side section being in the form of a channel beam, the flanges of which extend outward, and one forming a base adapted to rest on the ground and the other forming a top 100
 guide for a strike-off or finishing tool, the said interlocking means consisting of a forwardly-projecting tongue at one end of each side section and a socket at the other end, and into which socket fits the tongue of the 105
 next following side section to interlock adjacent side sections, and the said fastening means consisting of slotted projecting tongues at the ends of the division plates, fitting into and passing through apertures 110
 in the webs of the channel beams, to hold the division plates and channel beams in upright position and flush at their upper and lower edges with the top and bottom of the channel beams, and wedges passing 115
 through the slots of the said division plate tongues and resting against the outer faces of the webs of the channel beams.

MARK STEWART HOTCHKISS.

Witnesses:

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 GEORGE H. BASLER, Jr.